Bus identification system using RFID

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ABSTRACT: **This system helps blind in travelling from one place to another. Generally journey in a bus is a safe and confort factor. But travelling in outdoor environment is difficult for those who have congenital blindness or blindness from young age. This work aims to develop a bus detection prototype using Radio Frequency Identification (RFID) for blind. RFID has the potential to be a useful aid with further standardisation of RFID tags and current RFID readers.**
Key words: **Radio Frequency Identification (RFID), Radio Frequency Reader (RF),**

I. INTRODUCTION:

Today, one of the most worldwide occupations is helping and supporting visually impaired person. Those people live in a limited environment and have difficulty to sense what happen around them, which reduces their activities in several fields such as education and transporation since they depend only on the own intuition. At present 285 million people are visually impaired worldwide 39 billion are blind and 246 have low vision in most physical environment the visually impaired have difficulty about transport stops, terminals, vehicles. Hence there is a need to make their lives more comfortable by introducing a system that helps them move independently like ordinary people[1,2,3]. The existing systems includes a hardware part that involves a Radio Frequency Reader (RF) which is placed in user module. RFID is an automatic identification method relying on storing and remotely retrieving data using device called RFID tags or transponders. This reader will detect RFID tag which consists of integrated chip (IC) and small antenna and will be placed in a bus after being informed of the existence of VIP's in RF communication. The reader is mainly based on (RFID) which is a technology uses wireless radio frequency transmissions between person and device. This work is based on bus identification system using Radio Frequency identification technology. RFID systems uses tags through which information embedded on the tags are read by RFID readers[4,5,6]..

II. PROPOSED SYSTEM:

Destination voice to the blind:

PIC 16F877A has high performance RISC CPU and its operating voltage range is 2 to 5.5V with the temperature range -40 to +125.PIC 16F877A has highly flexible low cost microcontroller design tool and low power consumption. So, in this system using PIC 16F877A microcontroller can hear all the sounds in the maximum frequency range of 20MHZ to effectively sense the word by the blind people shown in fig 1.
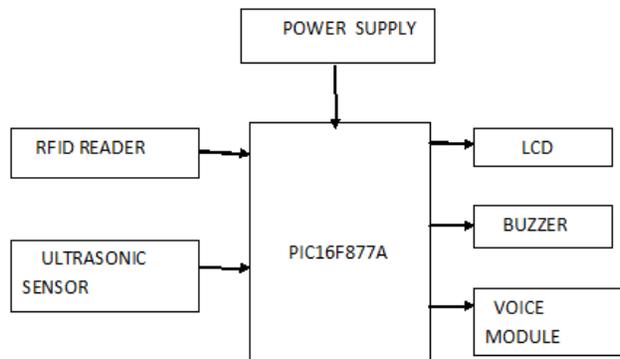

Fig-1:Block Diagram For Bus Boarding System

III. TAG IDENTIFIACTION TO REACH THE DESTINATION:

To identify the destination RFID system consists of RFID tag, reader and an antenna.

RFID tag

An RFID reader transmits an encoded radio signal to interrogate the tag. The RFID tag receives the message and then responds with its identification and other information. This may be only a unique tag serial number

RFID reader

The radio frequency is used to decode the data in the RFID tag and is   produced by the

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RFID reader. When a radiofrequency wave interacts with an RFID tag, the pins or the bar code energizes and produces its own magnetic field which has a unique interference pattern and the information read by the RFID reader and it would obtain the unique number designated to the corresponding RFID tag. Thus the RFID reader obtains the address of the desired RFID tag to identified the tag and get the information shown in fig 2.
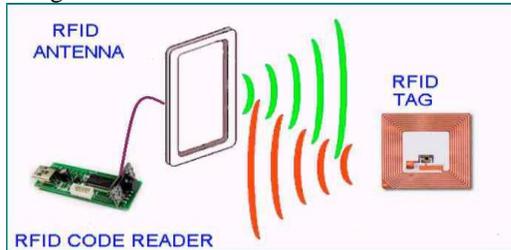

Fig.2 Rf id Communication

ULTRASONIC SENSOR DETECTION

Ultrasonic sensors emit short, high-frequency sound pulses at regular intervals. These propagate in the air at the velocity of sound. If they strike an object, then they are reflected back as echo signals to the sensor. Ultrasonic waves are sounds which cannot be heard by humans in the normal condition, with frequencies of above 20 kHz. In order to detect the presence of an object, ultrasonic waves are reflected on objects. It is used to detect the obstacles in front of the blind to navigate shown in fig 3.

BUZZER RING AND VOICE MODULE:

A buzzer is an audio signaling device which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input. A piezoelectric buzzer can be driven by an oscillating electronic circuit or other audio signal source. A click, beep or ring can indicate that a button has been pressed.
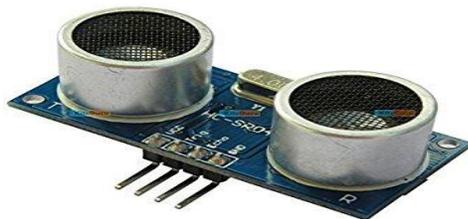

FIG-3 HC-SR04 SENSOR

FIG-4 BUZZER

In this system consists of two parts. The first one is RFID tag. This tag is placed into the bus in which the information are feed into the tag and each bus having own RFID tag. Through the electromagnetic field, the information about the bus is send by RFID tag to the RFID reader. Whenever it's enter the RFID receiver are it will get the energy from the transmitter and then send the details to it. The second one is receiver system. Blind person had this receiver unit. It is used to read the information's from the bus then convert into voice then play the voice through the voice board module. Also the obstacle sensor is used to sense the objects in between the path. If there is any obstacle in the path and it will sound through buzzer then the blind people safe and clearly identify the path to reach the destination shown in fig 4.

IV. EXPERIMENTAL RESULTS:

The hardware unit consist of the RFID Reader,RFID Tag, ultrasonic sensor, buzzer, voice module are used to navigate the blind people without any assistance. The Figure 5 shows the hardware-RFID Tag unit. RFID Tag is used to store the information of the bus by the program. The Figure 6 shows the hardware-RFID Reader unit. The RFID Reader receives the bus details from RFID Tag and converted through speech by using voice modules then he/she starts to move.

FIG 5 :Hardware-RFID Tag unit

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FIG-6 Hardware Rfid Reader

V.   CONCLUSION:

The visually impaired people need some aid to interact with their environment with more security. For security purpose we implement the RFID Technology to navigate the blind people without any assistance. In this system the ultra-high frequency radio waves is used to show in the implemented system which will use the RFID tag and reader setup along with customized program that will help the blind people identifying the exact bus. Thus, the RFID technology is used to help the blind people.

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